

MARINE REVIEW.

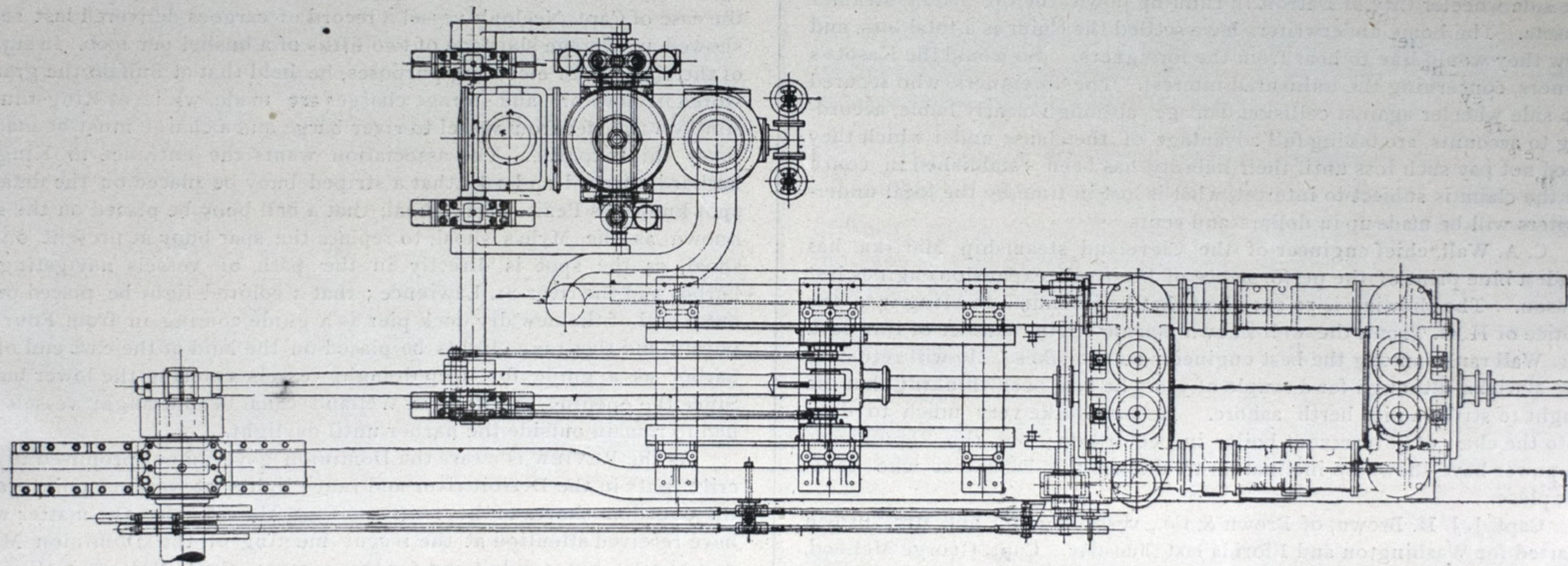
VOL. III.

CLEVELAND, OHIO, THURSDAY, FEBRUARY 5, 1891.

No. 6.

Engines for the C. P. Car Ferry.

The accompanying engraving illustrates two side-wheel engines for the C. P. R. R. ferry steamer Michigan, built by S. F. Hodge & Co., Detroit. They are of the horizontal, direct acting, single cylinder type, working on separate shafts, and have the following dimensions, viz: Diameter of main shafts, 17 inches; diameter of cylinders, 50 inches by 9 feet, 6 inches stroke (steam jacketed); diameter of paddle wheels, 28 feet; size of float for paddle wheels, 9 feet 6 inches by 2 feet 4 inches. Each engine is fitted with an air pump, 32 inches diameter by 42 inch stroke, which, together with the feed and bilge pumps, are worked from the main crosshead by means of connections and rocking levers, in the usual way. The pumps and condensers are located below deck in a special engine room.



PLAN OF ENGINES IN CANADIAN PACIFIC CAR FERRY.

The valves, located on the top of cylinders, are of the double beat, equilibrium type, worked by means of cams and lifters from the eccentrics; they are also arranged to be worked by hand. The engine framing is riveted to the main deck and consists of heavy wrought iron plates and L iron, and to which the cylinders, crosshead guides and main bearings are firmly secured. Steam is supplied at a pressure of 90 pounds from four Scotch boilers, 13 feet in diameter by 13 feet 6 inches length.

Canadian Aids to Navigation.

Lieut. Col. Wm. P. Anderson, engineer in the Canadian marine department, informs us that the Canadian government is now constructing two range light towers, which will be erected on piers that have already been sunk in the line of the centre of the 400-foot channel at the Lime Kiln's crossing, and the new lights will be ready to be put in operation on the opening of navigation next spring. This work is being done under the direction of Colonel Kallman, United States engineer at that point, and it is expected that the lights will be very satisfactory, as the towers are higher, and the lamps will be more powerful. "I am not aware of any other improvements that are in contemplation by our government in the same locality," says Col. Anderson.

"Last autumn I built piers around three-quarters of the circumference of the Colchester reef light-house, to increase the protection against waves and ice, and it is proposed to complete the circumference next spring. But of course this is only a matter of detail, affecting our department; it does not in any way change the maintenance of the lights."

Secretary Keep, of the Lake Carriers' Association, has also been in communication with the Canadian authorities with regard to lights. Mr. Keep says in a letter to Capt. McKay: "I received recently a letter from Hon. Charles H. Tupper, Canadian minister of marine and fisheries, in which he says he has asked Col. Anderson, the engineer of the department, to report fully on the subject of necessary lights on the Canadian side of the Detroit and St. Clair rivers, with estimates of the amount

required to supply such lights as may appear necessary for the safe navigation of the rivers named. Col. Anderson's report will be presented to the governor general and his counsel for consideration when the estimates for the next session of parliament are dealt with. I wrote the minister, referring to our conference with him last June, calling again his attention to all the facts we then presented, and especially dwelling on the fact that the business of the Welland canal and of the port of Montreal was all brought to those places through the Detroit and St. Clair rivers and that, whether the commodities were carried in Canadian or American bottoms, the safe navigation of those rivers appeared to be of vital importance to Canada. I further volunteered to send to the marine department or to Col. Anderson, all information in my power to compile tending to show the necessity of the lights now maintained at private expense, and further agreed that either myself or some better qualified person would appear before the proper Canadian authorities or committees, to give such evidence and information as might be found useful."

The owners of the schooner Two Brothers, of Port Hope, have entered suit against the steamer Reindeer, for \$700 damages the schooner sustained by collision with the steamer in November last. The case will be tried at Picton, Ont.

Signal Code—Affairs of the Underwriters.

Special Correspondence to the MARINE REVIEW.

BUFFALO, N. Y., Feb. 5.—The Buffalo lodge, E. M. B. A., is daily growing in strength and usefulness. It is setting a good example for other lodges of this sensible order to follow. A series of informal talks, or lectures, if you please, on subjects of practical interest to lake mariners, will be given by gentlemen willing and competent to treat instructively thereon. Last evening, the genial and obliging Capt. Dobbins talked to a large number of the members on the signal code and life-saving service. Capt. Dobbins has a way of making things clear as he goes along, and it need hardly be said that his hearers derived positive benefit from his discourse. There is no man in this country more deeply or more practically concerned in the saving of life and property from shipwreck than our own Capt. Dobbins, and the signal code is of positive utility in connection with that noble service. He has interested the members vitally in the hitherto neglected signal code, and where there is real interest progress will follow. Signalling at sea is an attractive study in itself. It is strange that so few of our lake steamers have adopted signal letters. Outside of the Lehigh Valley liners very few have done so. There are positive advantages in the system, and in time owners will find this out.

Secretary Sill, of the Inland Lloyds, has corresponded with the members to find out when they could make it convenient to attend the annual meeting. He has heard from only a few. When the rest send in word he will issue a call. It was intended to have the meeting this week, but now it must go over till next week anyway. There was a little money left over from last year, so Capt. Dan. McLeod, manager of the vessel register, has been enabled to plod along slowly in getting things in shape for the coming issue. The Cleveland Mercantile is the only company withdrawn from the Lloyds, and there is no knowledge of any new comers.

The English underwriters are in no hurry to settle the loss caused by the side wheeler City of Detroit in running down the ore laden steamer Kasota. The home underwriters have settled the claim as a total loss, and now they would like to hear from the foreigners. So would the Kasota's owners, concerning the uninsured interest. The foreigners, who secured the side wheeler against collision damage, although clearly liable, according to accounts, are taking full advantage of the clause under which they need not pay such loss until their liability has been established in court. As the claim is subject to interest, what is lost in time by the local underwriters will be made up in dollars and cents.

C. A. Wall, chief engineer of the Cleveland steamship Mariska, has made a blue print of the performance of her triple expansion engines last season. The showing is so excellent that he intended to bring it to the notice of H. G. Trout, the well known marine engine builder of this port. Mr. Wall ranks among the best engineers on the lakes. He will return to the Mariska, although for a couple of years he has been thinking that he ought to strike a nice berth ashore. He would like very much to drop into the chair of government boiler inspector here, but the Republicans in power have shown no inclination to disturb the Democrat who holds the place.

Capt. J. J. H. Brown, of Brown & Co., vessel agents, and Mrs. Brown started for Washington and Florida last Tuesday. Capt. George McLeod, marine inspector or Smith, Davis & Co., and Mrs. McLeod left for Florida the following day. They will be gone for several weeks.

In West Bay City's Shippards.

Special Correspondence to the MARINE REVIEW.

WEST BAY CITY, Mich., Feb. 5.—The propeller Araxes, which sunk near the Bay City dry-dock last fall, was raised this week. The vessel lay in twenty-two feet of water and the services of a diver were necessary to make repairs to her hull before she could be raised. Capt. Fred. Dale will command the steamer R. G. Cole again the coming season. The propeller Forbes will be in command of Capt. George Harper. The Dove, which was on a lake Superior route last season, may be added to what is known as the Shore Line this year. The steamers Metropolis and Arundel have been on this lide for several years but the Arundel, which was one of the staunchest and fastest passenger boats running out of the Saginaw river, has been put on another route and the R. G. Stewart will take her place. The Dove was formerly on the Shore Line, but was taken off when the Arundel was brought here. With vessels of the class of the Dove, Metropolis and Stewart, the proprietors of this line should not complain of the falling off of passenger traffic. People can't be expected to ride in such vessels either for business or pleasure.

Congressman Wheeler says that his suit against Capt. Davidson will be pushed to a finish. It is expected that it will come up for trial about the middle of June next.

"I don't think there is any other place on the lakes where they would call shipbuilding dull with the amount of work that is going on in this city," said a lake captain a few days ago. "Here is Wheeler with three boats, valued at over half a million dollars, now on the stocks, and Davidson has five, the value of which will foot up nearly a million dollars. You

people have become used to such an immense amount of work going on at a time that you don't know when you are doing what in other places would be called a rushing business."

Captain Alfred Mitchell, of the Steamer Edward Smith No. 2, is in the city with his wife. "We can't complain of our last season's work," he said to THE REVIEW. "We made twenty-two round trips with our tow and carried 62,000,000 feet of lumber." Captain Mitchell is displaying an elegant solid gold watch and chain which was presented to him by the Evans Transportation Company as a testimonial of gratitude for his work in saving thirteen sailors from one of their vessels which was burned Oct. 20, in mid-lake.

Congressman Wheeler has spent the week in Detroit, superintending the finishing work on the Canadian Pacific Railroad ferry. From there he will go to Washington, where he will remain until the close of the session.

The work of raising the Araxes is progressing quite rapidly at the Bay City dry dock. The boat lies in twenty-two feet of water, and the job of raising her is no small task. It is expected she will be brought to the surface some time next week. It has been found necessary to resort to diving in order to make some repairs to the hull.

The Canadian Marine Association.

Special Correspondence to the MARINE REVIEW.

KINGSTON, ONT., Feb. 5.—The Canadian Marine Association held its annual meeting in Toronto last week and discussed matters of general importance. The vessel owners complained of shortages in grain cargoes at Kingston, also of the elevating charges at that point. Capt. Neelon, of St. Catharines, contended that the shortages were excessive and it was held by others that there was no cause for the elevating charges. Capt. Gaskin, representing the Montreal Transportation Company, met these claims by showing that as a rule vessels ran short in unloading, and in the case of Capt. Neelon's vessel a record of cargoes delivered last season showed an average shortage of two-fifths of a bushel per 1000. In support of the charges for elevating purposes, he held that at Buffalo the grain is stored in elevators, and storage charges are made, while at Kingston it is simply a transfer from vessel to river barge and a charge must be made to cover this expense. The association wants the entrance to Kingston harbor improved and asks that a striped buoy be placed on the detached spot known as Penitentiary shoal; that a bell buoy be placed on the shoal known as the Myle's shoal, to replace the spar buoy at present on that shoal, as the spot is directly in the path of vessels navigating this harbor and the river St. Lawrence; that a colored light be placed on the outer end of the new dry dock pier as a guide coming in from Four Mile point; and that range lights be placed on the land at the east end of the harbor as a guide for deep draught vessels entering the lower harbor. Since the opening of the new Welland canal deep draught vessels have had to remain outside the harbor until daylight.

As the REVIEW is aware the Dominion government promised to place crib lights in the Detroit river and range lights at various points along the Canadian shores of the rivers. It was thought that the matter would have received attention at the recent meeting of the Dominion Marine Association, but it didn't and for this reason: Capt. McKay, of the Cleveland Vessel Owners' Association, was expected at the meeting to introduce the matter and represent the association named. Nobody else cared to move. The subject, however, will not be lost sight of. In the near future a deputation of mariners will wait on the minister of marine and urge the better lighting of the Kingston harbor, and at the same time, a prominent mariner says, they will lay before him the demand for more lights at dangerous places along the lakes. It is considered beyond a doubt that the government will give special attention to marine during this year.

Another leak has shown itself in the new dry dock and now it is again half full of water. Work has been stopped till the spring. The outlay caused by leakage has been heavy on the contractors.

Capt. William Mack, of the Cleveland Vessel Owners' Association, is here seeing the scenes of his youth. He was born near here. He left Kingston for Oswego when a young man, and after following the water for some years he went to Cleveland. He was taken in tow by old acquaintances and given a hearty welcome.

Your correspondent had an interview a few days ago with the Hon. G. A. Kirkpatrick, who introduced the reciprocity in wrecking bill in the house of commons. He says that the matter will again be brought up at the approaching session of parliament, and that the probabilities are it will be carried. Certain difficulties which existed when the bill was under discussion before have been wiped out, so that it looks as if there will be reciprocity in wrecking next year.

It is understood here that the New York Central Railroad Company intends buying Thousand Island Park, down the river, rebuild the hotel and run regular excursion trains from New York City to the islands next season. People will be able to leave New York on Saturday night, spend Sunday on the river, and be back in New York at 7 a. m., Monday.

Capt. Ed. Beaupre, ex-manager of the St. Lawrence Steamboat Company, leaves next week for Albany to assume management of the Hudson & Albany Steamboat Company. The firm, he says, intends running a half hour service between Albany and Troy. Capt. Beaupre has been on the waves all his life and thus far everything he handled was a success. His proposed departure from Kingston is regretted.

The indications are that there will be an early opening of navigation, but the prospects of a busy season are not bright. It was expected that a large quantity of western corn would go down the St. Lawrence in the spring, but the price of that cereal having gone up, very little of it will come this way. It is only when corn is cheap that it goes down the St. Lawrence. Another matter which tends to make a poor outlook is the fact that the northwest wheat, which did not ripen quick enough to be moved last fall, is now being shipped in cars. Unless a heavy snow storm sets in to impede the railway traffic to some extent, the wheat will have nearly all disappeared before spring and little or none will be left for the boats to carry when navigation opens. Timber is still a drug on the market and little is being taken out of the woods. All these things considered by the forwarders here cause them some anxiety, as they have already spent large sums in preparing for next season's trade.

The matter of grain shortages was disposed of by a resolution asking the government to appoint an inspector to be stationed at Kingston who will see that the proper scales are used in weighing the grain. It is proposed that he be paid pro-rata. A resolution was also passed urging upon the government the necessity of carrying out the work on the St. Lawrence canals more expeditiously than heretofore. Still another resolution asks for an order reducing to 2 cents per ton the tolls through the Welland and St. Lawrence canals on grain destined for the seaboard by way of Kingston and Montreal, when trans-shipped at Canadian ports.

Another Year of Private Lights.

Late advices from Washington would indicate that the vessel owners will again be disappointed in the matter of appropriations for lighthouse purposes. The sundry civil appropriation bill has been reported to the house and it contains appropriations for only two aids to navigation on the lakes—a light at Brad-dock's point, \$35,000, and a fog signal at the mouth of Genesee river, both Lake Ontario, \$4,300. There is also an item of \$35,000 for a supply and buoy depot at St. Joseph, Mich., and one of \$20,000 for a lamp-shop at Detroit. These four items constitute the entire list for the lakes. This is certainly discouraging to lake interests, as it means another year of private lights with the accompanying expense of maintaining them, which must come from the pockets of the vessel owners, and this at a time when there is every reason to expect low freights.

The bill also cuts the Sault lock appropriation to \$600,000 and the Hay lake channel appropriation to \$300,000, but in the connection the result will not be quite so serious, as the last appropriations were late and the bulk of them yet remains unexpended.

Transfer of Vessel Property.

A great deal of vessel property is offered for sale at all of the leading ports on the lakes, but there are few changes in ownership so far. Prices seem low enough but few of the vessels offering for sale are of the desirable class. The steamer Raleigh, owned by John Corrigan, of this city, was sold last week by H. J. Webb & Co., to N. S. Whipple, of Detroit. The price was somewhere about \$40,000. The Raleigh was built by Quayle in 1871 and has an A2 rating in Inland Lloyds. The steambarge Nashua, owned by the Sturtevant Lumber Company, was also sold to Capt. D. Millen and others, of Detroit, price \$11,000. Other transfers are: Schooner Penobscot to Capt. H. Waring, of Milwaukee; schooner La Petite, Milwaukee, Peter Thorp to Capt. H. Oertling, Sr., one-third interest, \$800.

Official figures of the pig iron production of the United States during 1890, published by the American Iron and Steel Association, show that the total of production was 10,307,028 net tons, or 9,202,703 gross tons, a gain of 21 per cent. on the production of 1889, which was in turn 17 per cent. greater than in 1888, the product of that year and 1887 being less than seven-tenths of the total of 1890. This total is 1,200,000 gross tons above the product of England for the same period year; but as compared with England's greatest year of iron production, in 1882, it is only 600,000 tons in excess.

The Proposed Twenty-foot Channel.

Gen. Poe's recent report upon his preliminary examination for a ship canal, twenty feet in depth and a suitable width, in the shallows of the connecting waters of the lakes between Chicago, Duluth and Buffalo, has been forwarded to the house of representatives by Secretary of War Proctor. He submits two estimates: One is for a twenty-foot channel, which Gen. Poe says will cost \$2,379,058 and the other for a channel twenty-one feet in depth in certain places. The deeper channel will cost \$3,339,568, and Gen. Poe recommends this channel because as he says, a channel of twenty feet in quiet waters, free from boulders or stone, is navigable for vessels of a draft closely approximating the depth, but in localities subject to heavy seas such a channel would at times be impracticable even with a considerably less draft than would be perfectly safe in the former case. To bring the two cases into something like equality the channels exposed to a sea way or obstructions should be at least a foot deeper than those not so exposed. Gen. Poe's estimates for the twenty and twenty-one-foot channel are:

Removing two shoals near Round island.....	\$ 85,487 00
Removing obstructions at Sailors' Encampment.....	556,333 00
Removing obstructions at foot of Lake Huron, first proposition.....	449,512 80
Dredging at St. Clair flats.....	313,559 40
Dredging at Grosse point flats.....	956,825 76
Dredging at mouth of Detroit river.....	977,850 00
Total.....	\$3,339,567 96

Gen. Poe says among other things in the report: "Although the sum of \$3,339,568 is a large one, yet the end to be gained by its expenditure is so important and so pressing as to fully justify its appropriation, even in one act."

A Book on Boiler Furnaces.

"While the corrugated furnaces possess indisputably ordinary merits, there should not be overlooked the very valuable increase it produces in the economy of fuel, due to superior combustion, which alone in a short time of use will repay the original cost of the furnace, besides, in the case of marine boilers enabling a less quantity of coal to be carried on board the vessel for a given voyage of given duration, thereby leaving more displacement available for cargo." This is quoted from a paper embodied in a handsome book issued by the Continental Iron Works, Brooklyn, N. Y. Detailed drawings and prints illustrate the arrangement of furnaces in new cruisers and the book is valuable. Send your address to the Continental Company mentioning the MARINE REVIEW and you will receive a copy.

Art in Adjusting Marine Losses.

To anyone acquainted with the complications that enter into the adjustment of marine losses, the preparations of a neat and clear statement by the average adjuster must always be considered a work of merit. Two such statements recently sent out from the office of E. T. Hitchcock, Buffalo, are especially worthy of note and have attracted considerable attention around the lakes. One was in the case of the steel steamship Mariska, which sustained a heavy loss at the Sault, and the other was that of the line boat Winslow.

Bids for the new torpedo gunboat cruiser will be opened at the navy department, Feb. 11. The new vessel is designed to have 750 tons normal displacement. The speed requirement is 23 knots an hour. In other words, American mechanics are to be asked, after only a few years of experience in designing, to build marine engines as fast as any that have yet been built by the British with a quarter century of experience behind them. The designs call for triple expansion engines fitted with four cylinders, two cylinders working in one expansion. Horace See, the naval designer, is of the opinion that the naval department is making a mistake in not stipulating for quadruple-expansion engines.—Safety Valve.

Instructive Talk to Lake Masters.

Mr. Harvey D. Goulder, whose extensive practice in admiralty, together with an early practical training in lake navigation, has given him a thorough knowledge of all branches of the lake marine, addressed the Cleveland lodge of the Excelsior Marine Benevolent Association, order of lake masters, Saturday, on matters pertaining to marine insurance. Mr. Goulder's remarks were more in the way of an informal talk than an address, being interrupted throughout by questions from his hearers. He first took up the matter of protests and advised, as has been his custom with clients for several years past, that protests be avoided, especially in collision cases, until such time as they can be made with the greatest care and by those who are capable of making them in the right way. "A protest is the most important feature in the litigation that follows it" said Mr. Goulder. "There is not more than one notary in five or six thousand who knows how to make out a protest. There are a few such in the leading lake cities—Cleveland, Buffalo, Detroit and Chicago—but there is nobody at the Sault who knows how to make a protest and yet captains rush to that point immediately after an accident. The protest is as important as the testimony of the master on the stand, and if you think you must protest on account of surrounding circumstances consider it most carefully and make it short. When it comes to a question of how fast you were running be exceedingly careful—not like a master and engineer whom I know of and who said they were running seven miles an hour, when the testimony of outsiders afterward showed conclusively that they could not have been running more than five miles an hour. In the excitement attending the work of making the protest they had forgotten that their boat had been checked down a short time previous to the accident. In all such cases the other side will hold that the protest was made when the details of the accident was fresh in mind, and this argument goes a great way with the court. It has discouraged me many times, though, when I know how hastily such papers are prepared. In many cases a protest six months afterward would answer all purposes."

Mr. Goulder then talked of the matter of averages, beginning with the simple definitions of general and particular averages and afterward citing many interesting cases together with the customs that rule on the lakes. The difference for practical purposes between general average and particular average is that the former denotes an element of voluntary sacrifice while the latter is confined to accidental losses. A vessel runs on a rock and her cargo of grain is damaged. This is all particular average. Her master afterward gets a steam pump and lighter with attending expense. This goes to general average and should be assessed on all interests, as it is for the general good. The tug pulling on the vessel may break a timber head or run into her sides and smask the bulwarks. This is also general average. The boat is afterward taken to a port of repair and her cargo is discharged. All expenses of handling cargo go to general average but the repair bill on the boat goes to particular average. At the port of destination an adjustment is had and all voluntary loss is assessed upon the various interests saved so far. This idea of voluntary sacrifice is, however, confined to other qualifications and rules which Mr. Goulder made plain by the many special lake cases which he cited. One of the first was that of the little schooner Church which went down while tied to one of the Cleveland piers. It was at first thought that the boat was sunk by striking on a sunken spile, and if such had been the case, the loss would have been general and would have been assessed on cargo and vessel alike. Investigation proved, however, that the boat leaked through some fault around her cente-board box. The vessel was not seaworthy and the loss did not occur from a peril of sea. Another case that went to the supreme court was that of a schooner whose master in thick weather on Lake Michigan, bound for Chicago, heard the whistles of locomotives and, thinking he was going to Chicago, put into Waukegan. He went on the bottom and a big bill of expense was encountered in the lightering of cargo and release of the vessel. The vessel owner thought of having the cargo stand a portion of this expense but

the matter was reversed, the cargo owner obtaining damages for his loss. The adjustment of losses in the rivers is in accordance with a lake custom that is now as good as law. There is no peril to a vessel stranded in any of the rivers, but lake underwriters have been adjusting these losses for three or four years past, on account of the surrounding circumstances. This custom would in law compel the hull underwriters to pay losses but probably not the cargo underwriters. Another qualification in general average may be understood from the case of a vessel starting out with a cargo belonging to several owners. A peril of sea is encountered and all of the cargo belonging one owner is thrown over, while that of nine others is saved. The court or adjustor in this case would say "We will take the value of the one man's loss and then make deductions from all interests." The rule would be followed still further in case an additional expenditure is made for the employment of tugs, lighters, etc. Another question is that of contributing for goods carried on deck. The supreme court has held that where there is no agreement to the contrary, the ordinary bill of lading calls for all freight being carried, but on the lakes the shipper understands the custom of carrying certain commodities, such as lumber, pig iron, etc., and the custom is legal. It used to be claimed that where a steamer had a consort and the consort got adrift or stranded, it was the duty of the steamer to stay by the consort and render her assistance without additional compensation. This is not true of the steamer engaged for towing services any more than it would be true of a strange steamer passing and finding a vessel in distress. The only difference between the steamer engaged to tow the vessel and the strange steamer is the fact that the latter would be entitled to salvage charges as well as compensation for service rendered, whereas the employed steamer, after rendering all reasonable aid, should be compensated for extra services but could make no salvage claim. Nothing extra paid to the crew of a vessel can be allowed in general average, as it is the duty of the crew of a disabled vessel to stay at the pumps or render any other assistance to their utmost. If the crew insists on extra pay under such circumstances and the captain is forced to accede to their demands on account of being at sea or in port where other assistance can not be secured the courts would not hold the vessel to such a contract with the crew.

Shipping Articles on the Lakes.

Following his talk to the Cleveland captains on insurance matters, Saturday, Mr. Harvey D. Goulder was asked to say something about shipping articles. It was supposed, Mr. Goulder said, that the recent decision of Judge Jenkins, of Wisconsin, in the case of the schooner Watson would do away with shipping articles. Judge Jenkins would be surprised if he were told that such an impression had gone out. In the codification of laws relating to this subject in 1872 desertion was made a crime, punishable by imprisonment and the forfeiture of all clothing and all other effects aboard ship. This desertion feature was made to cover the lakes but in 1874 a law was passed excluding it from the lakes. Later on in this same year, 1874, these codified laws were sanctioned. Now it has been claimed since Judge Jenkins' decision that the desertion clause, repealed as far as the lakes were concerned early in 1874, was sanctioned by the action later in the same year and that there was accordingly a conflict which excluded the lakes from the provisions of laws relating to shipping articles. This is an erroneous belief, as the late act of 1874 distinctly provided that in sanctioning the codified laws there should be no conflict with other acts and the lakes were accordingly excluded from the special penalty provided by the desertion clause but not from other provisions of laws relating to shipping articles. Mr. Goulder's advice to the masters was to be sure that shipping articles described the voyage, when passing by one state to another, giving it a beginning and an end. To say that a crew is engaged for a round trip will not do. If going from Buffalo to Chicago with coal and returning from Escanaba with ore the shipping articles must read, "Buffalo to Chicago, thence to Escanaba and thence to some port of discharge on Lake Erie." "If you have such articles," said Mr. Goulder, "making sure that a place of destination is designated, you have a good form of contract. You must also provide, however, for all signatures to the articles before leaving port. Do not put a scratch of a pen to them after your boat is outside."

A Piece of Mining Scrip.



The older officers of the Lake Superior mining companies remember the days when the mines had their own currency; money that served all purposes as well as the government currency of to-day. The bills were negotiable everywhere and there were millions of them afloat. They were called in when all such paper was cancelled years ago, and little is heard of them now. Some of them, representing small amounts, were not presented to the mining companies for payment and in such cases they were probably charged off to profit and loss. A few days ago Mr. W. H. Becker, cashier of the Pittsburgh & Lake Angeline Iron Company, represented in Cleveland by J. H. Outhwaite & Co., received for payment one of these sight drafts from Perth, Scotland. The bill was issued in 1867, nearly twenty-five years ago, but was in good condition. Although it was only of the dollar denomination the Scotch bank undoubtedly took it without hesitancy after consulting the report of Bradstreets or some other commercial agency regarding the mining company.

Iron Mining.

VALUE OF LEADING STOCKS.

Quoted by Chas. H. Potter & Co., No. 104 Superior St.

Stocks.	Par Value.	Bid.	Asked.
Cleveland Iron Mining Company.....	\$ 25 00	\$ 16 00	\$ 18 00
Champion Iron Company.....	25 00	90 00	100 00
Chandler Iron Company.....	25 00	39 00	40 00
Chicago and Minnesota Ore Company.....	100 00	110 00
Iron Cliffs Iron Company.....	50 00	125 00
Jackson Iron Company.....	25 00	90 00	100 00
Lake Superior Iron Company.....	25 00	65 00	67 00
Minnesota Iron Company.....	100 00	70 00	80 00
Pittsburg Lake Angeline Iron Co.....	25 00	145 00
Republic Iron Company.....	25 00	27 00	29 00
Michigamme.....	25 00	8 50	10 00

The disposition to reduce operating expenses and in most cases to cut down the output has shown itself more forcibly over the entire Lake Superior region during the past week. The Minnesota mine has followed the other big properties in a general reduction of 10 per cent. in wages and about 300 men have been laid off at the Chandler. At the Norrie, Pabst and other properties of the Metropolitan Land and Iron Company about 700 men have been discharged. Still, the output so far is not being cut as heavily as might be expected. In one day last week there was mined at the Minnesota 2,270 gross tons, the average for the past two weeks being about 2,100 gross tons daily. The Minnesota now has about 150,000 tons in stock. There has been some anxiety among the Chandler stockholders regarding a dollar installment of last year's dividend which has not been paid as yet, but there is good cause for suspending payment of any portion of the earnings. The Chandler company recently leased important territory immediately north of the mine, agreeing to pay a royalty of 30 cents a ton for ore mined. Considerable work has already been done in the way of testing the ground lately acquired, and a fine deposit of hematite has been exposed. The ore from the Chandler dipped in this direction, and it was quite certain would continue upon these lands. Drifts from the Chandler have been run to the north into the new acquisition and show the ore to be there in satisfactory quantity. All available funds may be needed in connection with this lease and for the purpose of carrying large quantities of ore that will be placed in stock.

Though some of the claims made regarding explorations in the new Minnesota districts may be exaggerated, it would seem that that state will soon be the center of Lake Superior ore production. Reports from the Mesaba range are still of a nature to excite wonder that more money is not spent in development. The Minnesota Iron Company is now said to be building camps and making general preparations for extensive explorations directly northeast of the Mallman mine. The Longyears, well-known mining men, and a corporation known as the Mesaba syndicate are working in the same neighborhood. Capt. E. W. Griffin, another mine operator of many years experience in Minnesota, is at work on what are known as the Buckeye and Diamond properties in the territory west of the Mesaba, which shows ore for a distance of thirty miles east of the Mississippi river. He claims to have a shaft at the Diamond mine 120 feet deep, 110 feet of which is in clean ore with no bottom as yet reached. Assays of average ore taken from the stock piles at a distance of every foot on both sides without culling, he says, gave as high as 56 per cent. of metallic iron. One-half of the strata penetrated goes 65 per cent. metallic iron and upwards. At the Buckeye he claims to have a working shaft down 73 feet, the portion below 50 feet being in clean ore with no prospects as yet of reaching the bottom of the vein. A further claim is that 100,000 tons of ore can be shipped next season if the funds for running a railway to Duluth and building docks at that point can be secured. The company which is developing the Buckeye mine consists of John L. Cowan, Judge Sage and W. H. Weakley, of Cincinnati, and Gen. James H. Baker, of Mankata, and Capt. Griffin and his brother E. M. Griffin, of St. Cloud. This company owns in fee simple and controls under state mining leases, 40,000 acres of land on the western range. The following compose the company which operates the Diamond mine: George F. Warner, Smith & Richardson, of Minneapolis, and Capt. Griffin. This company owns in fee simple and controls, under state leases, 9,000 acres.

John E. Burton, of Gogebic fame, is again engaged in legal difficulties at Milwaukee. W. R. Simmons has brought suit against John E. Burton, J. V. Quarles, Thomas W. Spence, Charles Quarles and the Northwestern Investment Association. Some time ago, according to the allegations in the complaint, the plaintiff got a judgment of \$5,215.83 against Burton. The execution was returned by the sheriff as having been unsatisfied. The plaintiff then goes back to 1888, when, he alleges, the Burton Manufacturing Company gave a mortgage for \$330,000 to the Central Trust Company, of New York. The mortgage was about to be foreclosed when Burton set up the defence that the contract, though the firm's place of business was in Chicago, was subject to the laws of New York, which rendered it usurious. Then the trust company, it is claimed, said they would give Burton \$10,000 out of the proceeds of the foreclosure if he would withdraw his defense. This Burton did and now Simmons alleges that either Burton or some of the co-defendants have the proceeds. Simmons asks that the defendant be enjoined from disposing of property, and that a receiver be appointed for it.

A big output is predicted for the Colby next year, notwithstanding the unfavorable condition of the market. Iron Ore, the Ishpeming mining publication, says in a long review of the affairs of the mine that there is every reason now to expect that the mine will yet lead the Lake Superior region. In the upper levels, which were supposed to be depleted when the mine was reported as giving out after three years of great prosperity, new ore bodies of large proportions have been discovered and a considerable product is now being derived from them. The mine is the property of the Penoque and Gogebic Development Company and this company was preparing for a big output previous to the present slump in the market.

The Metropolitan Iron and Land Company, controlling the Norrie, Pabst and Davis mines, with shipments aggregating 1,080,175 gross tons last year, met in Milwaukee last week but no dividend was declared although the company's operations have been very profitable. Solomon S. Curry, Stephen Clement, Orrin W. Potter, Hyatt S. Haselton and J. A. Whaling were elected directors. The officers who were all re-elected, are: Solomon S. Curry, president; L. J. Petit, treasurer; Hyatt S. Haselton, secretary. The Davis is a new name given to the property formerly known as the First National. The company has been exploring this property for two or three years, and it now promises to develop into an excellent mine.

MARINE REVIEW.

DEVOTED TO THE LAKE MARINE AND KINDRED INTERESTS.

JOHN M. MULROONEY, } PROPRIETORS.
F. M. BARTON, }

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The books of the United States treasury department contain the names of 3,510 vessels, measuring 1,063,063.90 tons in the lake trade. In classification of this fleet the lakes have more steamboats of 1,000 to 2,500 tons than the combined ownership of this class of vessels in all other sections of the country. The classification is as follows:

Class.	Number.	Tonnage.
Steam vessels	1,527	652,922.25
Sailing vessels.....	1,272	328,655.96
Canal boats.....	657	67,574.90
Barges.....	54	13,910.09
Total.....	3,510	1,063,063.90

According to the report of William W. Bates, United States commissioner of navigation, 46 per cent. of the new tonnage of the country was built on the lakes during 1889. This is a percentage greater than the work of the Atlantic coast and western rivers combined, and almost equal to the whole work on the Atlantic and Pacific coast. In 1890 the tonnage built on the lakes is but very little less than that built on the Atlantic and Gulf coasts. Tonnage built on the lakes during the past five years was as follows:

	No. of boats.	Net Tonnage.
1886.....	85	20,400.54
1887.....	152	56,488.32
1888.....	222	101,102.87
1889.....	225	107,080.30
1890.....	218	108,515.00
Total.....	902	393,597.03

Annual tonnage entries and clearances of the great seaports of the world, for 1889: New York, 11,051,236 tons; all seaports in the United States, 26,983,315 tons; Liverpool, 14,175,200 tons; London, 19,245,417 tons.

Tonnage passing through Detroit river during 234 days of navigation in 1889, amounted to 36,203,606 tons. Ten million tons more than the entries and clearances of all the seaports in the United States, and three million tons more than the combined foreign and coastwise shipping of Liverpool and London.

St. Mary's Falls and Suez canal traffic: Number of boats through St. Mary's Falls canal in 1890, 234 days of navigation, 10,557; tonnage, net registered, 8,454,425. Number of boats through Suez canal during 1889, full year, 3,425; tonnage, net registered, 6,783,187.

Entered at Cleveland Post Office as Second-class Mail Matter.

SENATOR SPOONER, of Wisconsin, informs the Milwaukee chamber of commerce that the bill to regulate the reporting and clearing of lake vessels, through which it is intended to secure reliable statistics of lake commerce, will pass at this session of congress. Everybody connected with the lake marine is desirous of seeing some law passed that will tend to show the importance of commerce on these waters, but unless we are badly mistaken there will be a general demand for the repeal of the law which the Milwaukee chamber of commerce proposes after it is in force a few months. It will be all right for the line boats having agents at the different intermediate ports on the lakes but the "wild" carriers will be subjected to a great deal of annoyance and delay on account of it.

THE sub-committee of the house committee on commerce proposes to insert in the sundry civil bill an appropriation for only 60 per cent. of the annual estimates for the completion of the Sault lock and Hay lake channel improvements. This would reduce the Sault lock appropriation for the fiscal year ending June 30, 1892, from \$1,236,000 to \$741,600 and the Hay lake appropriation from \$500,000 to \$300,000. It is a satisfaction to note that contracts are being entered into for the completion of these works and congress should not delay the plans of the engineering department. Gen. Poe's recent report on the necessity of a twenty-foot channel in the connecting waterways of the lakes should be convincing in this regard.

On the first page of this issue attention is called to the work of the Atlantic-Pacific Railway Tunnel Company in Colorado. The enterprise is one of the greatest in the world and the company, considering the magnitude of its operations, has made wonderful progress. The plan of finances, fully explained in connection with other matters pertaining to the enterprise, seems to be a very sound one and the inducements offered to investors are worthy of attention. The promoters have the support of people who are thoroughly acquainted with the details of the undertaking.

THE gentlemen who appeared in Washington last week for the purpose of killing Representative Burton's bill for regulation of the raft towing business—their demands are such that the bill might as well be killed—do not represent the rafting interests. They are tug owners engaged in towing rafts and are paid for the service of their tugs according to the number of logs towed through the rivers. Their demands should be considered accordingly.

If any action is to be taken by lake vessel owners with regard to the matter of constructing a second bridge over Portage lake between Houghton and Hancock, it would probably be well to direct attention first to the senate bill providing for the construction of the bridge, which was recently introduced by Senator Stockbridge, of Michigan. The proposed free bridge would certainly be a great hindrance to navigation.

The Portage Lake Bridge.

Representative Stevenson, of Michigan, has introduced another bill for the proposed free bridge over Portage lake, between Hancock and Houghton. His bill provides that the bridge "must not obstruct, impair or injuriously modify the navigation of Portage lake," and in order to secure a compliance with these conditions it is provided that the county of Houghton, previous to commencing the construction of the bridge, shall submit to the secretary of war a plan of the bridge together with other information touching the bridge and lake that may be deemed necessary by the secretary to determine whether the bridge, when built, will not impair the navigation of Portage lake. The secretary of war may detail an officer to superintend the surveys of the proposed site for the bridge and examination of the lake with a view to its location. The secretary of war is authorized and directed by the bill upon receiving a plan and map, and upon being satisfied that a bridge built upon such a plan will conform to the prescribed conditions of the bill to notify the county of Houghton, through the chairman or clerk of the board of surveyors, that he approves the same, and upon receiving the notification the county may proceed to the erection of the bridge, conforming strictly to the approved plan and location.

Money Expended on the Sunken Dows.

Speaking of the loss attending the attempts of the underwriters to raise the sunken schooner David Dows from Lake Michigan a year ago, the Milwaukee Evening Wisconsin says: The first set-back came in the shape of a failure to pass the lifting chains under the hull because of a smooth hard clay bottom upon which it rested. Capt. Dunham's cataract pump and a vessel were then engaged, and a considerable portion of the coal cargo of the craft recovered. This last step appears to have proved fatal to the Dows, for when severe winter storms set in soon afterwards the ground swell broke up the hull to such an extent as to place it beyond hope of recovery. A footing up of results after the final abandonment of the wreck showed that property of the value of \$4,000 had been recovered upon an expenditure of \$20,000. In other words the underwriters were out of pocket an even \$16,000 as the result of winter wrecking in the open waters of Lake Michigan.

Around the Lakes.

Frank Van Lien, of Saginaw, has been appointed boiler inspector for the district of Huron.

Campbell & McDonald have contracted to build 200 feet of breakwater at Agate bay, Lake Superior, for \$23,400.

Henry M. Atkinson, president of the Metropolitan Lumber Company and a prominent citizen of Escanaba, died last week.

To convert the steamer Toledo into a modern freighter without the old-style wooden arches costs \$7,000. The work was done at Detroit.

The schooner James Mowatt and steamer Britannic have taken on wheat cargoes at Chicago—freight and storage 3 cents, for Buffalo delivery.

The Milwaukee Boiler Company is building a 12x14 marine boiler for Rieboldt & Wolter, of Sheboygan, to go into the new dredge which the firm is having built there.

Union sailors at Milwaukee will remain a part of the Knights of Labor although the Chicago organization seems to favor affiliation with the American Federation of Labor.

Capt. Robert Gillies, formerly of the Isaac May fleet, will command the schooner Sweetheart the coming season. Capt. Baxter, who was on the Sweetheart, will go as mate of the steamer J. C. Pringle.

Ashtabula attempted to launch a tug last week and took a whole day at the job. In the morning one of the laborers was badly injured and shortly after dinner the foreman was sent home under a doctor's care. Later in the day a third man was thrown into the river and there is no report as yet that the tug has been floated.

A party of surveyors under the direction of D. H. Muehle has been engaged for ten days past in surveying the mouth of the Saginaw river and locating the sand bars. They have completed the work for nearly a mile back from the dummy lighthouse, and will continue until a chart of the river is completed as far up as Saginaw.

Cleveland Matters.

Capt. W. C. Richardson, who has been confined to his home for some time on account of severe illness, is again giving attention to business.

Capt. David Gerardin will be advanced in the Northwestern Transportation Company's line to command of the steamship Fayette Brown next season.

Messrs. Rose & Lazier, of Duluth, have formed a partnership in the vessel brokerage business. They called on Cleveland acquaintances during the week.

It is expected that the steamer Dakota, the wooden boat building here for the Goodrich Transportation Company, will be ready for service about the middle of May. She will run between Chicago and Grand Haven in connection with the City of Racine.

Capt. Thomas Wilson, Valentine Fries, Capt. George Stone, Henry D. Coffinberry, Robert Wallace, Capt. P. G. Minch and H. D. Goulder, are the directors of the Ship Owners' Dry Dock Company elected Tuesday to serve for the ensuing year. Capt. Thomas Wilson was elected president; Capt. George Stone, vice-president; Gustav Cold, secretary and H. D. Goulder, treasurer.

The twelfth annual report of the Sailors' Floating Bethel Society recently issued, shows that some genuine charitable work is accomplished by the chaplain and superintendent, Rev. J. D. Jones. In addition to the services held at the bethel, 165 River street, the chaplain conducted a large number of funerals and relieved numerous cases of destitution in families of lake faring men. The work is largely supported by local marine men, Capt. Thomas Wilson being president and W. D. Rees, treasurer. Expenditures for the year were \$4,611.

ENGINEERING, London, SCIENTIFIC AMERICAN and SUPPLEMENT, MARINE REVIEW, all one year for \$15. Write to MARINE REVIEW, 510 Perry-Payne Building, Cleveland, O.

Excelsior Marine Benevolent Association.

At last Saturday's meeting of the Buffalo lodge, Capt. Daniel Coughlan was initiated. Capt. J. M. Todd, the secretary, was presented with a combination gold pen and pencil, a neat double inkstand, and a handsome paper cutter. Capt. Welcome delivered the charge, and the recipient made a happy response. On Wednesday, Capt. D. P. Dobbins delivered a lecture on the signal code and life-saving service. It is intended to have other lectures on pertinent subjects, such as marine insurance, charters and contracts, wrecks and collisions, weather observations, and so on.

Cleveland lodge, No. 4, now has 150 members and the list is being increased every week.

Marine Engineers' Beneficial Association.

At the sixteenth annual convention of the Marine Engineers' Beneficial Association, just closed in Washington, John H. Galwey, of Detroit, was re-elected president for a term of two years. Other officers are: E. W. Tucker, of San Francisco, vice-president; J. H. Harris of St. Louis, secretary, and George Uhler, of New York, treasurer. The delegates numbered over fifty and represented all sections of the country. Officers report showed an increase in membership during the past year of over 40 per cent. During the course of the convention a resolution favoring the American shipping bill was unanimously adopted, and Congressman Farquhar, leading advocate of the bill, together with James A. Dumont supervising inspector general of steam vessels, addressed the meeting. The supervising inspectors, who were also in session in Washington last week, were informed as to the desires of the engineers regarding rules and the commerce committee of the house was also appealed to on legislative measures.

Great preparations have been made for the tenth annual social gathering of the Cleveland engineers and their friends at Haltnorth's hall tomorrow (Friday) evening. The annual ball and banquet is always attended by a great deal of good feeling.

Officers of No. 47, of Sault Ste. Marie are: Arthur Adams, past president; Peter Kelly, president; George Comb, vice-president; Joseph M. Beauchamp, treasurer; James Grive, financial secretary; Peter Kelly, corresponding secretary; Norman Rains, recording secretary; Henry H. Evens; chaplain; David Sebastian, conductor; William Tate, doorkeeper; John McDonald, Robert J. Condlon, Arthur Adams, trustees. Meetings are held every Thursday in room No. 8, First National Bank block.

James M. Graham, who died in Buffalo a few days ago, was one of the best known marine engineers on the lakes. Three years ago he held the position of chief engineer of the United States light-house tender Haze.

A branch was organized at Sturgeon Bay recently. There are fourteen members.

Death of Capt. J. W. Hall.

Capt. J. W. Hall, of Detroit, who has of late years been engaged in marine work for the Detroit Journal, died in that city on Saturday last. Capt. Hall was connected with the lake marine all his life and had compiled in scraps book form, a history of commerce from its commencement up to the present time. He was born in Fort Erie, Ont., opposite Buffalo, in 1813. During the year 1816 his father, Cyrus Hall, was owner of the brig Sir Isaac Brock and schooners Elizabeth and Union. From 1820 to 1834 Cyrus Hall carried on a forwarding business. During this period J. W. Hall acquired a knowledge of sailing and in 1832 shipped on the Schooner Comet, trading between Buffalo and points on Lake Erie as far west as Cleveland. His first charge was the schooner Billow, in 1844, and he afterwards commanded the Thomas Corwin, the Emeline, the De Witt Clinton, the Sandusky, the Harriet Calvin, and the brig J. R. Giddings. He quit sailing in 1858.

Real Cause of Decline of the American Merchant Marine.

The sympathy of the whole country is aroused in behalf of the merchant marine, and congress is considering measures by which its revival is expected. The investigation of congress and of the commissioner of navigation into the causes of the decline have revealed the fact, that American vessels have been discriminated against by English underwriters and thus driven from the field of action in free competition. These investigations have further established the fact, that all other great powers have adopted the policy of Great Britain to open and establish permanent sea routes by subsidizing ocean steamers and thus enlarge their foreign shipping and commerce. So far so well.

It is fully correct that the discrimination of English Lloyds is the principal cause of the decline, but the reason for such discrimination—the real source of evil—has not been touched upon by anybody. It is not Lloyds or the English government; it is the people of all Europe, who have boycotted American vessels on account of their being commanded by unexamined officers. It has been a fight of the educated sailor against the unlettered one. Long before the appearance of the merchant shipping act in 1854, making examination of captains and mates compulsory in England, continental Europe had nautical schools for the merchant marine, and established boards for examining sailors; and it was at the instance, or for fear of these continental powers, that Great Britain had to adopt compulsory examination, too. In the hands of Lloyds and all foreign insurance companies, examination of officers has become a formidable weapon to ward off American competition and bring the United States merchant marine near extinction. It is not the American wood or iron that is discriminated against, it is the officers in command of American vessels.

The decline of the merchant marine dates back exactly to 1854, when examination of masters and mates was made compulsory in all Europe. By that time American foreign shipping was at its height and American clipperships were renowned the world over—the pride of every seaman irrespective of nationality. All Europe acknowledged the superiority of American vessels then commanding 70 per cent. of American foreign shipping. But despite all these favorable circumstances, American vessels have been driven from the ocean by foreigners. It was because Europe had made it the rule to examine officers, against which American vessels could not hold their own. Superiority in building was more than offset by superiority in command, at least in the opinion of European people. This prejudice has destroyed American shipping in foreign trade. It is therefore in vain to expect all good to come from subsidies and bounties. A regeneration of the marine service on the basis of the European standard for masters and mates has to go hand in hand with subsidies, else the revival of the merchant marine will prove a failure. The United States being possessed in 1854 of the best merchant marine in the world, which had to succumb to the educated sailor of Europe, it is no use to try the experiment again under ten-fold increased difficulties. It is for congress to consider the real cause of the decline and destroy the prejudice of Europeans by establishing a high standard of examination for masters and mates, to be handled without fear or favor. Then, and not until then, the revival of the merchant marine will be a success and American shipping will assume the proportions to which it is justly entitled.

JOHN MAURICE.

Conclusions from the Report of the Light-House Board.

The MARINE REVIEW has all along held that the importance of lake commerce has not been fairly considered in recommendations bearing on legislation pertaining to light-stations and other aids to navigation. This opinion is again justified in the annual report of the light-house board, just issued, but it is to be hoped that the recent visit to the lakes of Rear-Admiral David B. Harmony, chairman of the board, will tend to help matters in the future. With a commerce greater than that of the entire Atlantic sea-coast, the vessel owners of the lakes should not be compelled to pay out thousands of dollars each year for the maintenance of private lights, especially when the board again renews its recommendation to congress that steps be taken to prohibit the establishment and maintenance of these lights. According to the report of the board, congress during the last session appropriated \$1,096,600 for new aids to navigation, and of this amount the lakes received only \$75,000, \$60,000 being for the Eleven-Foot shoal light-station and \$15,000 for a light on the Chicago breakwater. The new light-house tender for the Ninth and Eleventh districts was built at a cost of \$75,000, but this can hardly be included with the lights and fog-signals.

Several new light-stations were, of course, authorized without appropriations for their construction, and the sanction of the

present session is expected on more that have been requested, but it is to be hoped that the light-house board in its recommendations, as well as the committees on appropriations will see the justice of assisting a commerce so important as that of the northwestern lakes. Among the light-stations authorized, for which no appropriations were made, the following are on the lakes: Braddock's point light and fog-signal station, Lake Ontario, act of Sept. 29, 1890, \$24,300; Genesee light-station, steam fog-signal, Charlotte harbor, Lake Ontario, act of Sept. 29, 1890, \$4,300; Ashtabula range lights and fog-signal, Lake Erie, act of March 2, 1889, \$7,000; Old Mackinac point light-station, Michigan, act of March 2, 1889, \$25,000; Squaw island light-house and fog-signal, Lake Michigan, act of March 2, 1889, \$25,000; total \$85,600.

In the estimates of the engineers for special aids that are needed the report of the board shows the cost of such additional works on the lakes to be only \$502,400, as against \$2,814,958 in all of the other districts. Every one of these light-stations, fog signals, etc., are badly needed as the following summary of them will show: Bay State shoal and Oak point shoal, Lake Ontario, temporary floating lights, \$800; Carlton's island light-station, Lake Ontario, \$8,600; Tibbett's point fog-signal, Lake Ontario, \$4,300; Galloo island fog-signal, Lake Ontario, \$5,700; Oswego fog-signal, Lake Ontario, \$4,300; Genesee fog-signal, Lake Ontario, \$4,300; Braddock's point light-station, Lake Ontario, \$24,300; Wilson harbor light station, Lake Ontario, \$2,500; Buffalo breakwater fog-signal, Lake Erie, \$4,300; Presque Isle pier-head fog signal, \$4,300; Ashtabula range lights and fog signal, Lake Erie, \$4,700; Fairport fog signal and range light, Lake Erie, \$4,700; Black River range light and fog signal, Lake Erie, \$4,700; South Bass island light station, Lake Erie, \$8,600; Windmill point range lights, Detroit river, \$3,000; Fort Gratiot range lights, Lake Huron, \$500; Forty-mile point light and fog signal station, Lake Huron, \$25,000; Cheboygan river, (front) range light, Michigan, (additional land), \$1,500; Old Mackinac point light station, Michigan, \$20,000; St. Mary's river lights, \$30,000; North Passage light and fog signal, Lake Huron, \$15,000; St. Mary's river upper range lights, Michigan, (moving range lights), \$2,000; Simmons' reef or White shoal light and fog signal station, Michigan, \$90,000; South Fox island, fog signal, Michigan, \$5,500; Point Betsey light and fog signal station, Michigan, \$5,500; Ludington fog signal, Lake Michigan, \$5,500; St. Joseph pierhead fog signal, Lake Michigan, \$5,000; Ahnapee range lights, Lake Michigan, \$2,500; Sturgeon bay canal light station, Lake Michigan, \$20,000; Squaw island light and fog-signal station, Michigan, \$25,000; Porte des Morts range lights and fog signal station, Wisconsin, \$21,000; Pointe Seul Choix light and fog signal station, Lake Michigan, \$9,000; Eleven-Foot shoal light station, Michigan, \$42,500; Gladstone light station, Michigan, \$10,000; Escanaba fog signal, Green bay, \$1,100; Menasha range lights, Green bay, \$500; Depot for the Ninth lighthouse district, \$50,000; Eagle Harbor fog signal, Lake Superior, \$5,500; Chequamegon point light and fog signal station, Wisconsin, \$10,000; Bayfield light station, Wisconsin, \$5,000; Devil's island fog signal, Lake Superior, \$5,500; Superior Bay lights, Lake Superior, \$1,200; total, \$502,400.

Water Tube Boiler Figures.

Safety Valve furnishes a comparative statement of the work done by a return tube and the Almy water tube boilers in the steamer Queen City, 115 gross tons, speed 11 miles per hour; engine 14 by 24 by 14 stroke, 140 revolutions per minute; wheel 6 feet in diameter, 8½ feet pitch.

RETURN TUBULAR—WATER TUBE.

Square feet heating surface, 1,000—700.
 Square feet grate surface, 30—30.
 Weight of boiler, pounds, 22,000—12,000.
 Weight of water, pounds, 11,000—2,000.
 Number of trips, 205—248.
 Length of trip, miles, 71½—71½.
 Total number of miles, 14,657½—17,732.
 Anthracite coal, tons, 202—163½.
 Bituminous coal, tons, 206—264.
 Total coal consumed, tons, 408—427½.
 Coal consumed per mile, pounds, 5567—4821
 13½ per cent. saving in coal, 66½ tons.

Affairs in Admiralty.

SALVAGE AWARD FOR TUG SERVICE.

As the steamship Holland was lying at a pier in New York harbor, a sudden fire broke out on the side of the pier opposite to where the steamer lay. The officer in charge of the steamship requested a tug lying near to tow the steamship away. Later two more tugs were called. Under the power of these three tugs, and with two additional tugs keeping her off from the pier, the steamship was moved out of danger. The city fire department with twelve engines and two fire boats, came to the fire soon after it started. The service of the tugs lasted two hours. With her cargo the steamer was worth \$600,000. Judge Benedict, of New York, held that the service was a salvage service, in which the value of the property saved was great but the peril moderate, and \$4,500 was awarded to the tugs in proportion to their relative merits.

An important suit has been commenced in the circuit court at Bay City by George L. Burrows and Amasa Rust, of Saginaw, against the Delta Transportation Company. The plaintiffs were the owners of about 5,000,000 feet of lumber which was piled on the docks of the Cheboygan Lumber Company, and in October, 1890, the lumber was destroyed by fire, entailing a loss of about \$60,000. The plaintiffs allege that the fire was started by a spark from the smoke-stack of the steamer Minnie M., owned and operated by the Delta Transportation Company, and claim that the smoke-stack of the boat was not furnished with a spark arrester as provided by law. They therefore bring the suit to recover the sum of \$60,000.

A steamer and a schooner—steamer Chatham and schooner Hall—approached each other end on, or nearly so, at the rate of 366 yards per minute, on a bright moonlight night, in a channel 420 yards wide. The steamer kept on her course until within 50 or 70 yards of the schooner, when the master of the schooner, alarmed at the danger, changed his course, whereupon the steamer turned and backed, but too late to avoid a collision. Judge Hughes of the federal court, Virginia, held that the steamer was liable, since her neglect to keep away from the schooner until within "dangerous proximity" justified the latter in changing her course.

The case of the owners of the bark Sappho against the Brooklyn Dry Dock Company, recently decided by Judge Benedict, of the district court, New York, is one in which the drydock company applied a hydraulic jack under the keel of the vessel in the dry dock, whereby the keel was split and the vessel injured. It appearing that the keel was sound and strong, and that the cause of the accident was the failure of the dry dock company to take the ordinary precaution of placing a plank between the keel and the head of the jack, the court held that the dry dock company was liable for the damage.

The owners of the Passaic and tow, which were libeled some time ago by Wrecker Thomas A. Murphy, will contest the libel. The boats have been bonded and an answer has been made in the case by the defendant. The claim is for \$33,821.69. The proceeding is on account of the sinking of the scow Ben Hur, which was moored over the sunken schooner Tremble at Port Huron, by the passage of the tow by the spot. The wrecker claims that he lost the job by the accident.

The suit brought by Capt. Preston against Capt. James Davidson for wages comes up this week. Capt. Preston was master of the propeller Britanic when she came out, and when she went ashore in Detroit river on her first trip he was dismissed. It is claimed by the captain that the reason for the accident was the entangling of the wheel chains. He sues for full pay the balance of the season.

Direct Steel Process.

The New York Sun says: "The Conley-Lancaster direct steel process represents the most substantial advance ever made in the production of steel, in that it dispenses with the blast furnace and make possible one continuous operation from the ore to the finished ingot. This process and plant, secured throughout the world by several strong and valid patents, are the joint inventions of Michael R. Conley and James H. Lancaster, who have devoted considerable time and attention to its perfection

and development. Mr. Conley was for many years with Mr. Thomas A. Edison in developing the method of separating and cleansing magnetic ores by magnetic influence, and subsequently co-operated and is still engaged by Mr. James H. Lancaster, 171 Broadway, New York, the inventor of the well known Lancaster rock and ore crushers and excavating and dredging machines and hoisters, in the introduction of the now successfully demonstrated Conley-Lancaster process for producing steel and iron direct from all kinds of iron ore. The Conley-Lancaster process deoxidizes and converts any of these separated or cleansed ores without the use of any blast furnace plant or Bessemer converter into high grade steel as quickly and about as cheaply as pig iron can be produced from it at the blast furnace. A saving of at least \$12 a ton is effected by this process over that of any other known method. The cost of the plant for its production is only one-third that of any other known system."

Work of the Ship Yards.

It is proposed to double-deck the steamer Mary H. Boyce at Grand Haven before the opening of navigation.

At Benton Harbor, Mich., E. W. Heath is building a tug for parties at Ashland, Wis. He is also rebuilding the tug Parmelee and making repairs on the tug Welcome.

The schooner Charles Wall is being transferred into a barge at Toledo. Her spars will be reduced, new deck frames put in her and other improvements made. The schooner Josephine is being overhauled at the same place.

At Grand Haven Duncan Robertson is building a fishing tug 70 feet long, with 14 feet beam and 6 feet hold, for Troy, Lehman & Co., of Milwaukee. She will have a 13x14 engine, and a boiler 5 feet 3 inches in diameter and 8 feet 6 inches long.

Rieboldt & Wolter, of Sheboygan, have received a contract from the government to build a harbor dredge of the following dimensions: Length, 78 feet; beam, 30 feet; depth of hold, 7 feet 2 inches. The dredge is to be completed by May 1 and will cost about \$13,000.

The steamer being built by the Milwaukee Shipyard Company is planked, and only requires caulking, through bolting and kneeing off inside to complete the hull. On deck the turtle back, pilot house and cabin underneath, as well as the midship deck house are completed, while work is in an advanced stage on the after cabin. The fore-and-aft compound engine built by Trout, of Buffalo, is now being shipped.

Notice to Mariners.

The light-house board gives notice that on the opening of navigation a 10-inch steam whistle will be sounded, during thick or foggy weather, at La Pointe light station, Lake Superior, Wisconsin, giving blasts of 5 seconds' duration with silent intervals of 25 seconds. The fog-signal house is situated on the outer beach, about three-fourths of a mile to the eastward of the light tower.

The chief engineer of one of the large steamers running between New York and South America, which came into port a few days ago, states that he made the run of eleven thousand miles, which required forty-five days' continuous steaming, and that with the use of only one hundred gallons of extra heavy marine engine oil. This was a grade of marine engine oil manufactured only by the Vacuum Oil Co., of Rochester, N. Y., which is attracting much attention among marine engineers. On the ship referred to, with the oil previously used, it was necessary to run water on the thrusts, main shaft, eccentric and a number of other bearings but since adopting the Vacuum oil no water is used.

Inquiries as to the whereabouts of the steam life-boat F. L. Norton, which left New York over two months ago, bound for Toulon, France, and which was reported as being sighted off Gibraltar on December 18, have elicited the information that the report of her being sighted was brought to Toulon by a traveler from Algiers. He stated upon his arrival that he heard at Algiers that the F. L. Norton had passed Gibraltar on the date mentioned. Nothing whatever has been heard about the boat since then.

VESSEL AND MACHINERY EXCHANGE.

Space under this heading, may be used gratis by our advertisers or subscribers to call attention to vessels or any craft, machinery, new or second hand, that they may have for sale. Those wanting machinery of any kind, or wishing to purchase vessels, are invited to take advantage of the same offer. Each item will be limited to three lines. Letters concerning same must mention number attached to item and be addressed MARINE REVIEW, 510 Perry-Payne Building, Cleveland, O.

25—FOR SALE or Exchange for Real Estate—Steambarge Mineral Rock, and barges Sweepstakes and Saml. Bolton, lumber capacity 300, 400 and 500 m., respectively.

26—THREE good harbor tugs for sale.

27—FOR SALE—Partially constructed hull of about 130 tons. Cost \$1,400

28—WANTED—Harbor tug 16 x 16 or 18 with lots of steam.

29—FOR SALE—Ten steambarges, nine tugs, twelve schooners, fourteen tow barges, and four scows.

30—NEW BARGE—Ready for machinery, but rigged for tow barge, and steambarge rating A2 with 475 m. capacity, for sale.

31—FOR SALE—Sloop Cabin Yacht, length 30 feet, beam 9 feet.

33—FOR SALE—Six Steambarges, 400 to 1200 tons capacity; Six Schooners, 800 to 1400 tons capacity; Twelve Schooners, canal size; Four Lumber Barges, 350 to 400 M. ft. capacity; Two River Tugs; Two Harbor Tugs.

34—FOR SALE—Scow Jay Bird, rebuilt in 1890, good fit out, 50 tons burden.

35—FOR SALE—24 x 26 cylinder with heads, piston, valves, link, and eccentric rods. Good condition, second-hand, from barge A D. Haywood.

36—FOR SALE—First class yacht, cabin sloop 32 foot, winner of fourteen prizes, reasonably cheap.

37—WANTED—Steambarge to carry 800 to 1000 tons, must be cheap and in good condition.

38—WANTED—Good tug, from 55 to 70 feet long.

39—FOR SALE—Two tugs; one is 63 feet long, and has 14 x 19 engines, and the other is 40 feet long, and was built two years ago

40—FOR SALE—Steamer George Spencer, with old ore contract for coming season. Good condition; good carrier; good tower.

41—FOR SALE—Two fire box marine boilers, 6½ ft. by 13½ ft., allowed 90 pounds steam, deep furnace, suitable for wood or coal, in good order.

42—WANTED—Dredge in good condition. Give size of dipper, and when and by whom built.

43—FOR SALE—Newly finished 76 foot tug, engine 18x20, fine model.

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THE NEW YORK, CHICAGO & ST. LOUIS R. R.

	Arrive East.	Depart East.
Buffalo Passenger	10 40 AM	10 45 AM
Chicago Passenger	9 20 PM
WESTWARD.	Arrive.	Depart.
Chicago Passenger	6 30 AM
Postoria Passenger	5 06 PM	5 11 PM
All trains daily except Sunday.		

ERIE RAILWAY.

	Arrive.	Depart.
Youngstown Accommodation	*7 15 AM	†6 05 AM
New York and Pittsburg Express	†5 15 AM	*8 10 AM
Pittsburg Accommodation	*12 45 PM	*11 25 AM
New York & Pittsburgh Limited	*9 55 AM	*2 55 PM
Mantua Accommodation	*7 20 PM	*4 20 PM
Youngstown Express	†9 10 PM	†6 00 PM
New York & Pittsburgh Express	*6 50 PM	*11 00 PM
* Daily. † Daily except Sunday.		

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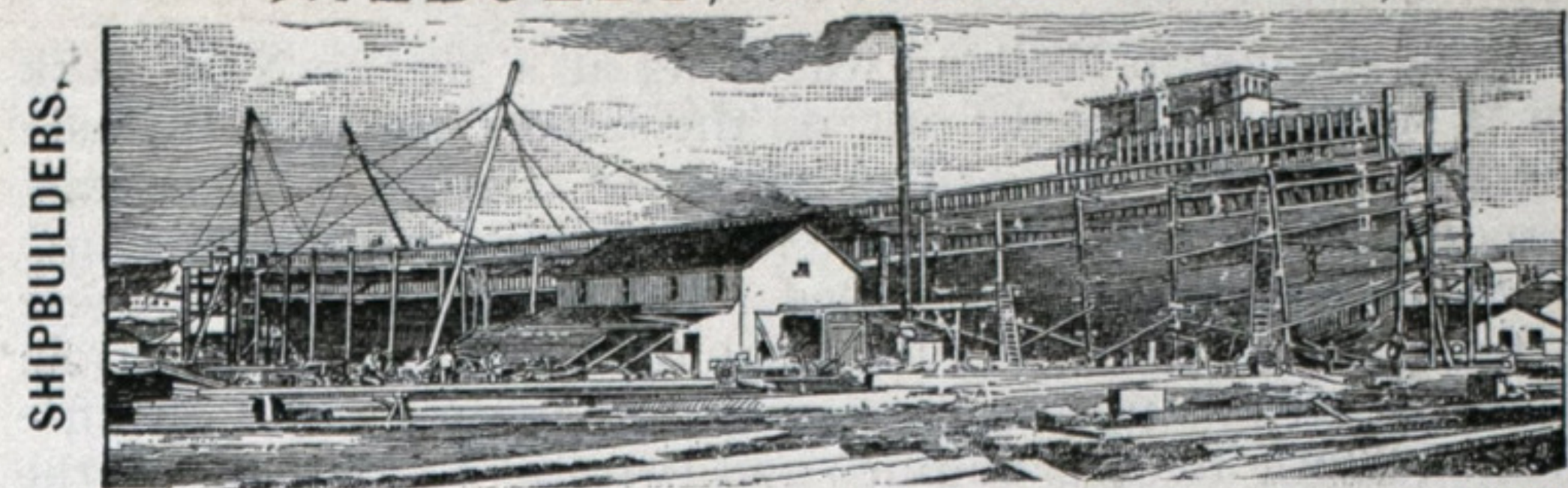
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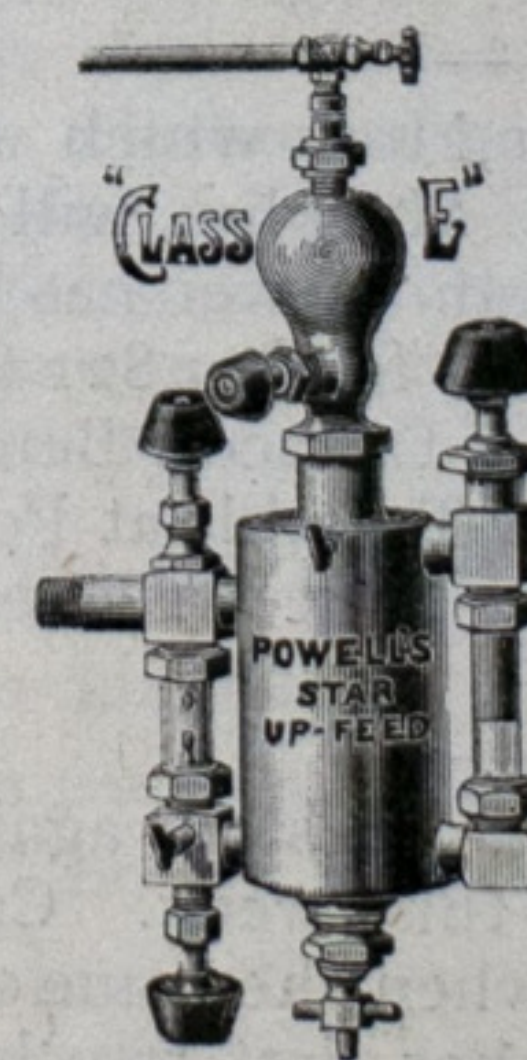
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S. P. CONKLING, 1 Larned St., West, Detroit, Mich.

TO SHIP BUILDERS. UNITED STATES Engineer Office, 157 Ottawa Street, Grand Rapids, Mich., January 17, 1891. Sealed proposals, in duplicate, for building a new hull for the U. S. Engineer Tug "Graham," now at St. Joseph, Mich., will be received at this office until noon of Tuesday, February 17, 1891. Preference will be given to materials of domestic production and manufacture, conditions of quality and price (import duties included), being equal. Attention is invited to acts of Congress approved February 26, 1885, and February 23, 1887, vol. 23 page 332, and vol. 24 page 414, Statutes at Large. The government reserves the right to reject any or all proposals. For information, specifications and blank forms address as above. WILLIAM LUDLOW, Major, Corps of Engineers, Bvt. Lt. Col. U. S. A. f12

TO BUILDERS. Office of the Engineer, Ninth and Eleventh District Light-House Districts, Detroit, Mich., January 26, 1891. Proposals will be received at this office until 4 o'clock p.m. on Monday, the 9th day of February, 1891, for furnishing the material and labor of all kinds necessary for building the Light-House on the other end of the breakwater at the harbor of Portage Lake, Lake Michigan, Mich. Plans, specifications, forms of proposal, and other information may be obtained on application to the undersigned. The right is reserved to reject any or all bids, and to waive any defects. WILLIAM LUDLOW, Light-House Engineer. f5

PROPOSALS FOR BUILDING TUG, Dredge and Scows. United States Engineer Office, 157 Ottawa Street, Grand Rapids, Mich., January 17, 1891. Sealed proposals, in triplicate, will be received at this office until noon of Tuesday, February 17, 1891, for building and furnishing complete one (1) tug, one (1) dredge, and five (5) dump scows. Preference will be given to materials of domestic production and manufacture, conditions of quality and price (import duty included) being equal. Attention is invited to Acts of Congress approved February 26, 1885, and February 23, 1887, vol. 23 page 332, and vol. 24 page 414, Statutes at Large. The Government reserves the right to reject any or all proposals. For information and blank forms, address as above. WILLIAM LUDLOW, Major, Corps of Engineers, Bvt. Lieut. Col. U. S. A. F-5



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SIX STEAMBARGES, 400 to 1200 tons capacity.

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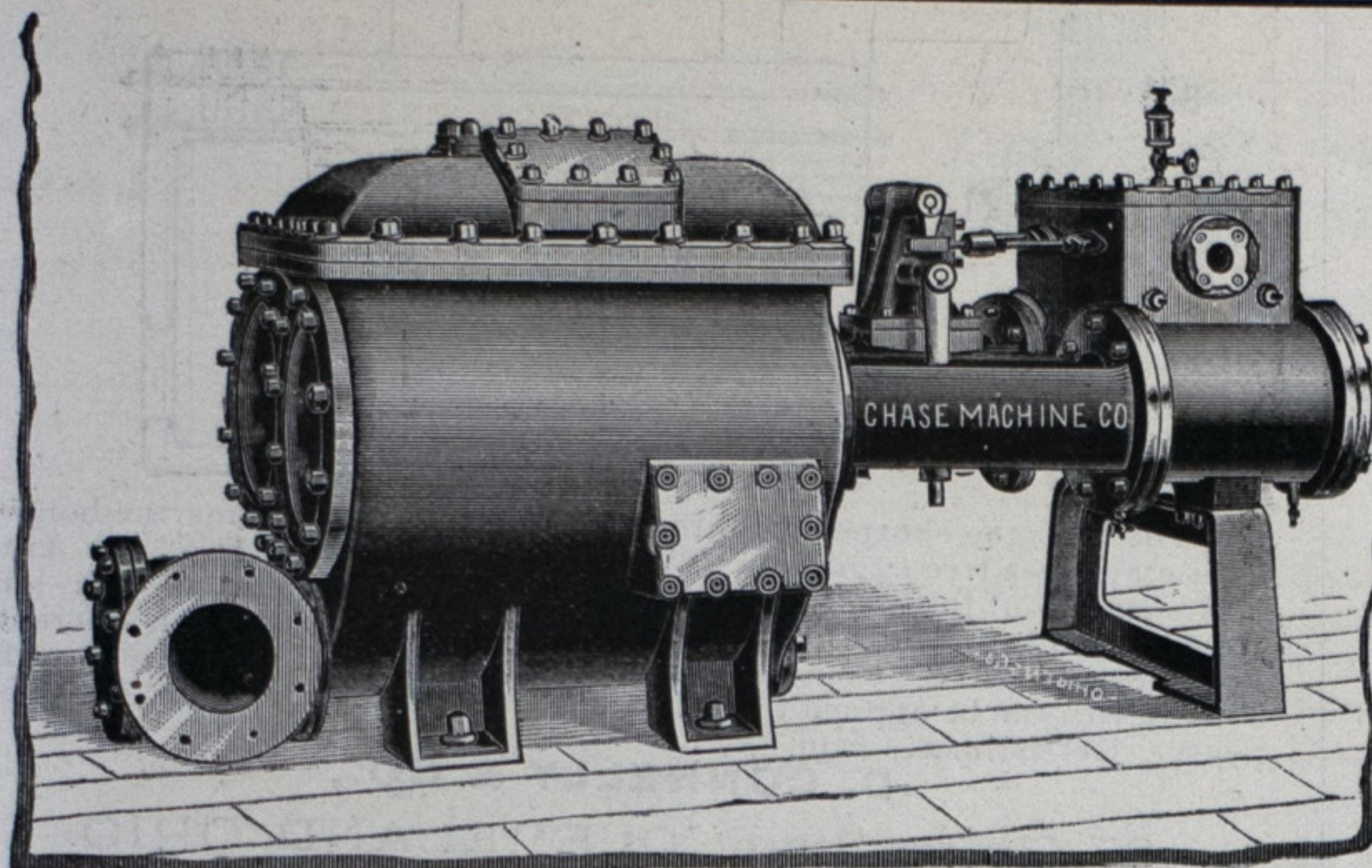
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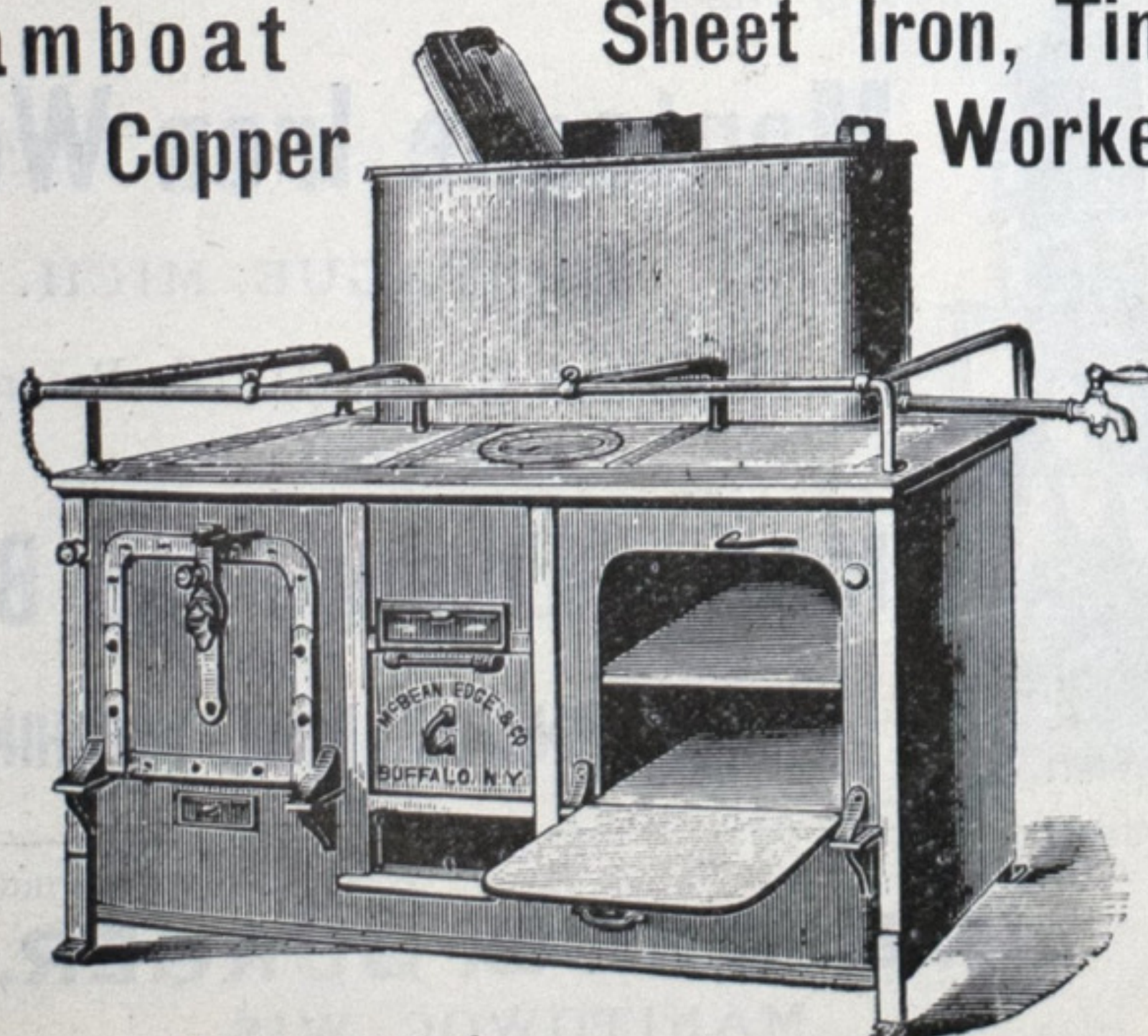
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Clark Dry Dock Co.	Detroit, Lower Docks,.....	{ 360 220	{ 68 42	10½ { 9 upper 11½ { 10 end.		Watchman at Dock will call Superintendent.
Detroit Dry Dock Co.	Detroit, Upper Docks,.....	{ 239 300	{ 42 56	{ 8 12		Watchman. Will call Sup't.
Ship Owners' Dry Dock Co.	Cleveland, Head Old River Bed	340	50	18	Depth of water enables loaded vessels to dock here.	Call Watchman.
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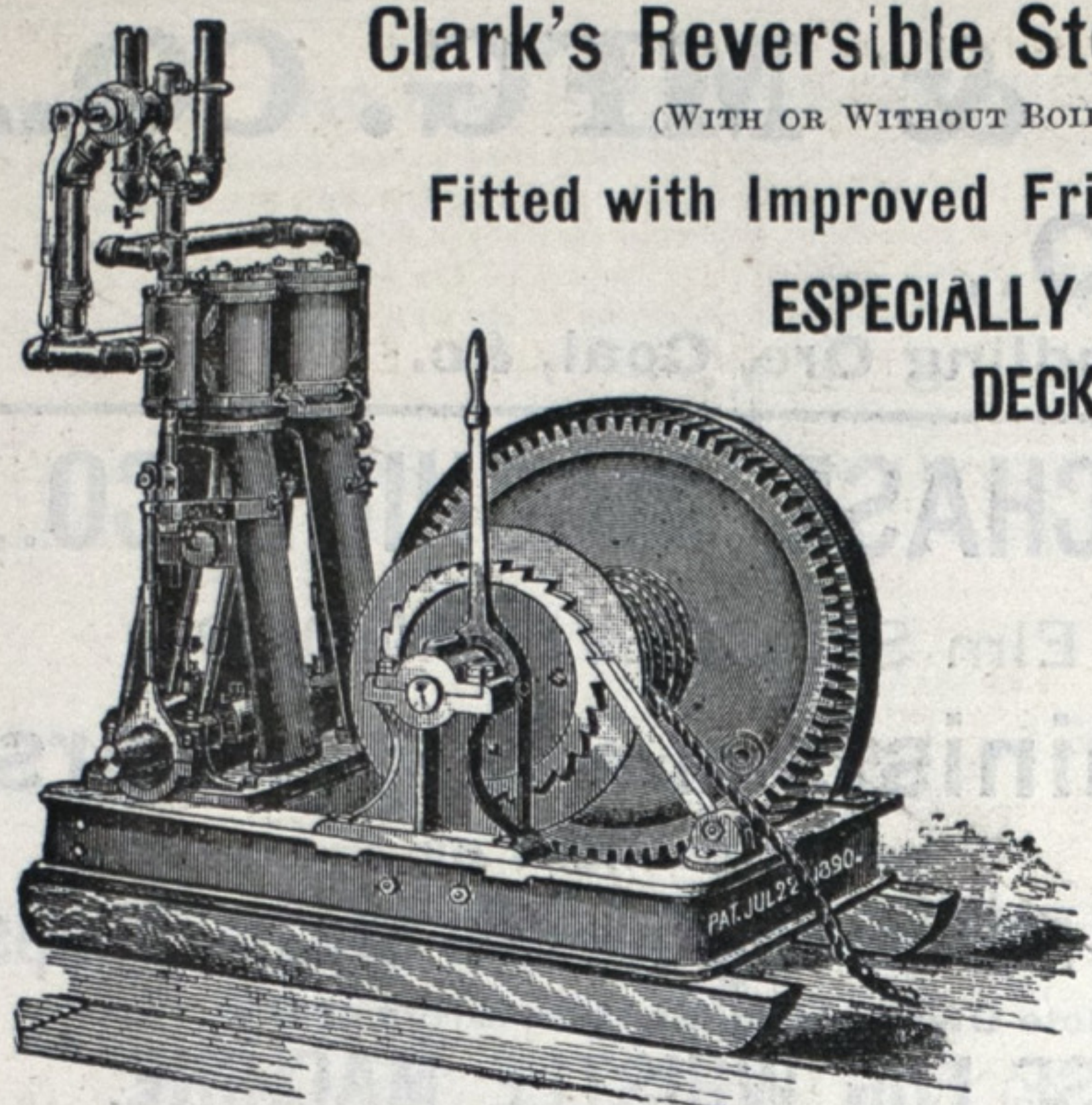
Cleveland, O., Jan. 6, 1891.
MILLER CHEMICAL ENGINE CO., Room 4, Bratenahl Bldg.
GENTLEMEN: I had occasion on the 13th of November to use your Extinguisher on board the steamer Queen of the West, of Cleveland. A large lamp used for signal purposes aft, fell about twenty feet and set fire to the whole roof of the engine room. I do not know what the consequences would have been but for the prompt and effectual way in which your extinguisher put out the fire, as the wind was blowing hard and a heavy sea running at the time. I heartily recommend your machine as a fire extinguisher on all classes of steamships. Yours truly,
JOS. A. NICOLSEN, Master Str. Queen of the West.

182 24th Street,
MILLER CHEMICAL ENGINE CO. Detroit, Mich., Jan 12, 1891.
DEAR SIR: Going up Lake Huron last fall during a heavy gale of wind and a big sea running, a fire broke out in one of the rooms of the steamer Fayette Brown, through the accidental upsetting of a lamp among some papers, and had gained considerable headway before discovered. By the prompt use of one of your Chemical Engines it was quickly subdued, and I think there was less than a pint of the fluid used. Have no doubt the fire would have given us lots of trouble without some such prompt and easy way of extinguishing it. Since that time I do not think a steamboat properly fitted out without the Miller Chemical Engine. Yours truly, C. H. BASSETT, Master Str. Fayette Brown.

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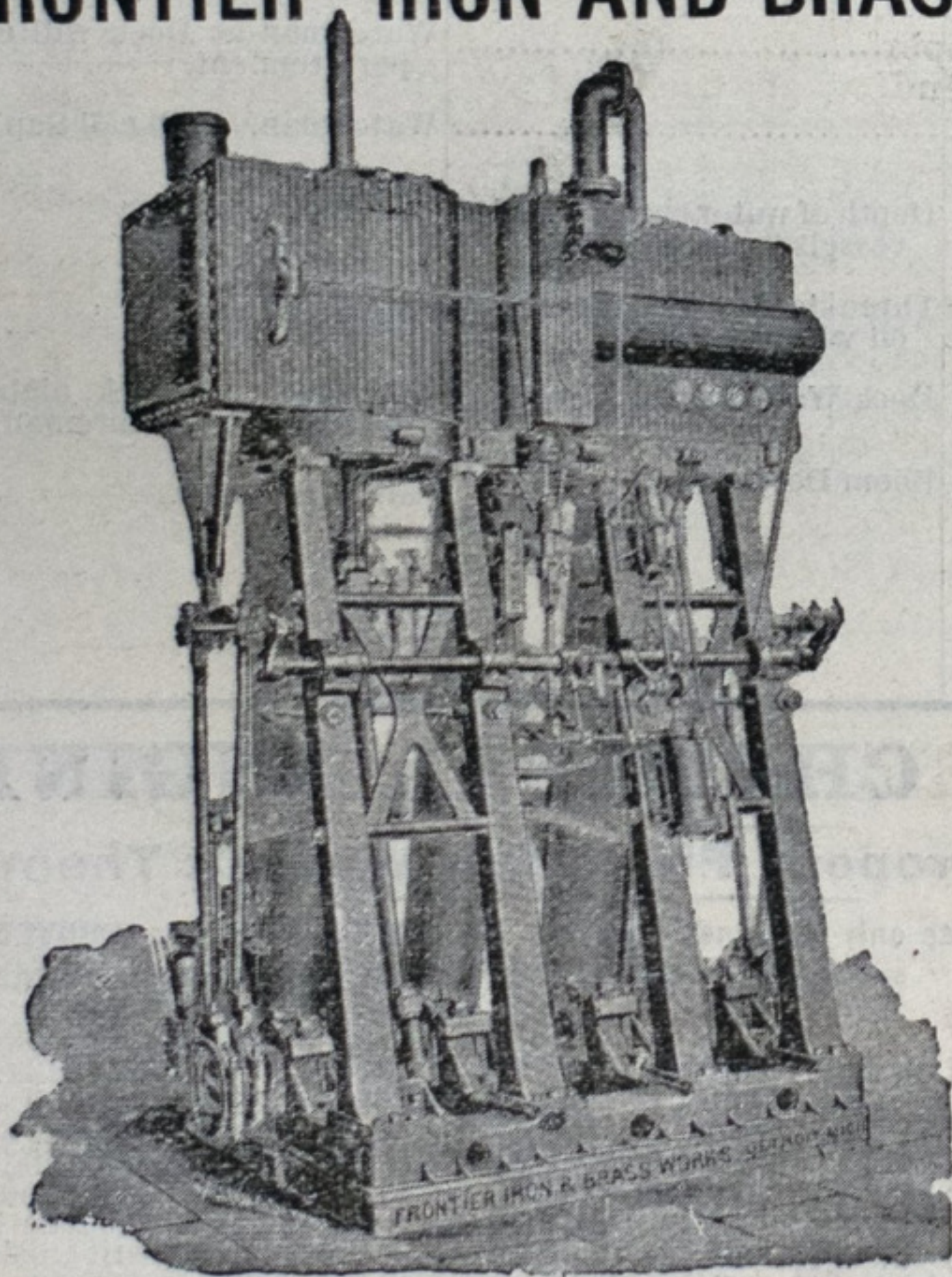
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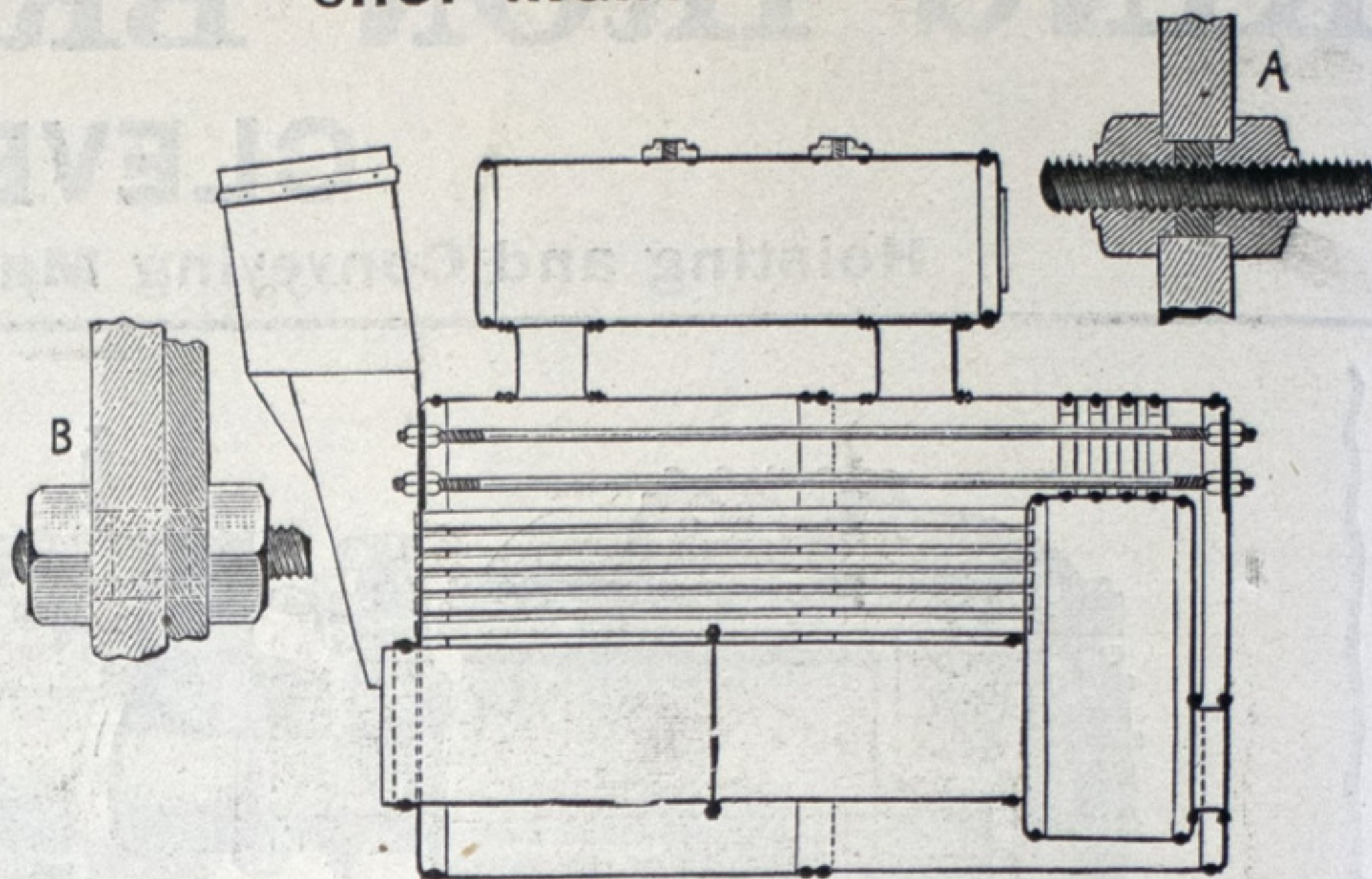
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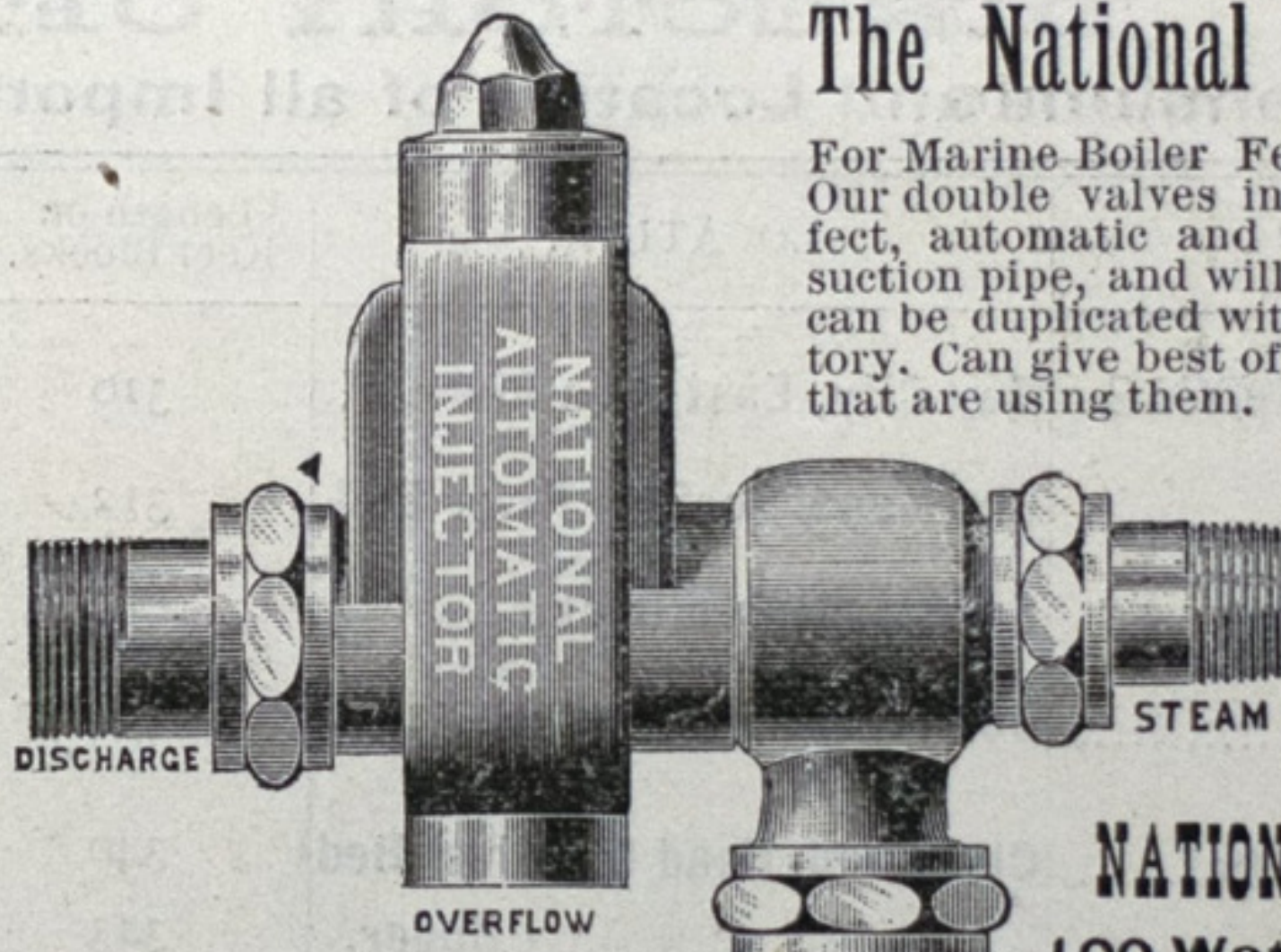


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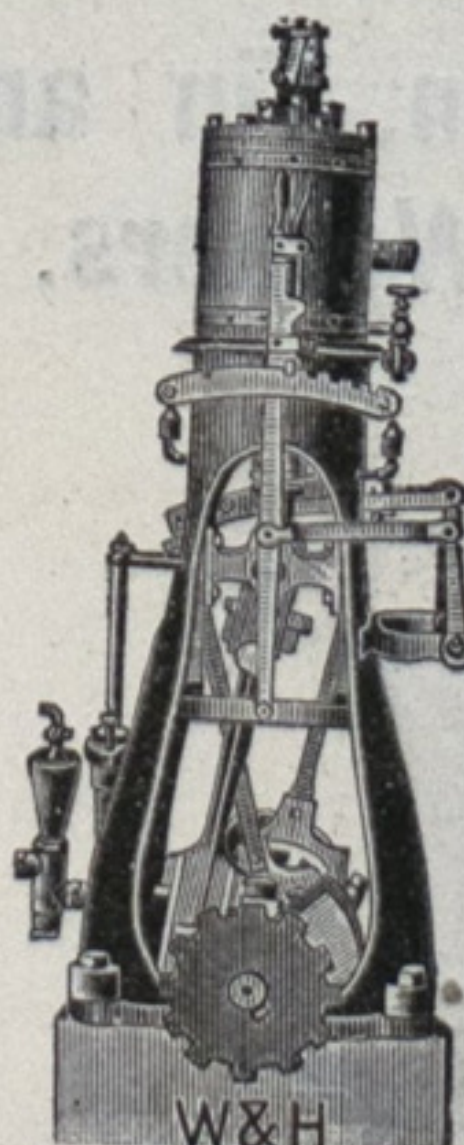
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